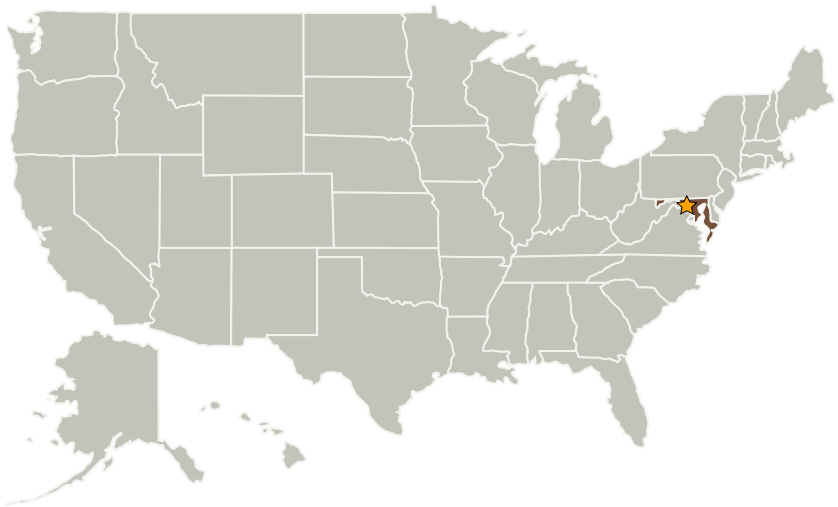
Electrostatic Clamp, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

This proposal addresses Topic X6.02, Space Assembly Maintenance and Servicing. Spacecraft surface attachments, such as handholds, foot-restraints or tether points are often installed prior to flight, to aid planned EVA (Extravehicular Activity) operations. However, such aids are precluded where their pre-installation could compromise aerodynamic, or other important functions, of certain surfaces. Furthermore, unplanned EVA tasks are, at times, required to address in-flight emergencies or other unanticipated circumstances. For these situations, a versatile means of securing essential EVA assist attachments is needed. This study proposes to research and develop an electrostatic attachment system for rapid surface attachment of portable EVA assist devices, almost anywhere on the exterior (or interior) of a space-borne platform. The system will enhance the addressable scope and efficiency of EVA task performance and aid in astronaut (or material) maneuvering and transit, worksite restraint, and tool or equipment tie-down. The attachment system will incorporate a self-contained power source, capable of operating in a vacuum environment, to produce and maintain a surface conforming electrostatic charge of sufficient magnitude to induce a useful attractive Coulomb holding force between the device and the surface to which it is contacted, without damage or permanent alteration to the surface.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Loats Associates, Inc.	Supporting Organization	Industry	Westminster, Maryland

Primary U.S. Work Locations
Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems